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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/755,443

01/13/2004

Sai Kee Oh

3449-0296P

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11/06/2006

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EXAMINER

FLANIGAN, ALLEN J

ART UNIT

PAPER NUMBER

3744

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/755,443

Applicant(s)

OH ET AL.

Examiner

Allen J. Flanigan

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 and 15-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13, 14 and 20-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Applicant's election with traverse of the species of Figs. 6-8 in the reply filed on 9/14/2006 is acknowledged. The traversal is on the ground(s) that "a reasonable number of species are permitted in an application". This is not found persuasive because first, a proper traversal must point out the alleged errors in the requirement for restriction (i.e. why the species are not patentably distinct). Restriction between patentably distinct species is permissible. Moreover, the "reasonable number" of species permitted is predicated on the existence of an allowable generic claim readable on all of the species¹. As pointed out in the restriction, there is no fully generic claim present in the application.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-12 and 15-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9/14/2006.

Claim 1 does not read on the elected embodiment, as it requires "more than four peak portions" on each fin; the elected embodiment employs four peak portions and five valley portions.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

¹ See MPEP 806.04.

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13, 14, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama et al.

Nakayama et al. shows a plate fin with corrugations of different heights (due to some valley portions being at a different level than others as shown in Fig. 2, for example).

Claims 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Haussmann.

Haussmann shows a corrugated fin plate assembly for heat exchangers with seats surrounding the tube receiving collars and inclined sections extending between the seat portions and the peaks. Note in regard to claim 21 that at least some of the valley portions are above the plane of the seat portion.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 24 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nakayama et al.

It appears that Nakayama et al. discloses a variation in valley depth of about 50 percent (the inner valleys appear to be about half the depth of the

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outer ones). This would yield a ratio of about 0.5. A translation of Nakayama et al. is not readily available, so it is not clear if any specific guidance is given regarding the specific values of these differing heights. It is clear from the English abstract that the reduced valley depth is designed to reduce the likelihood of breakage due to expansion of the fin material in the neighborhood of the collar. Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to adjust the value of this depth to produce a desired reduction in breakage of the fin, and that the claimed range would encompass at least one value suitable for the desired characteristic taught in Nakayama et al.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al. in view of Haussmann.

Nakayama et al. do not show the sort of heat exchanger tube their plate fin is designed to be employed with, but it is known in the art as shown by Haussmann that such fins with collars for receiving parallel tubes are used with zig zag or serpentine tube formations, and it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the fin of Nakayama et al. in such an exchanger structure.

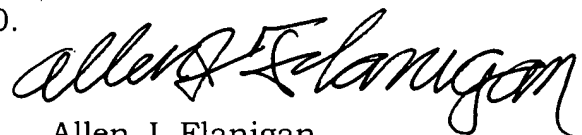
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining references of record show various plate fin designs for parallel tube heat exchangers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Allen J. Flanigan
Primary Examiner
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